



**American Association  
of Equine Practitioners**

**Horse Health Education**

# POISONOUS PLANTS

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# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OVERVIEW

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Take a stroll through any pasture and you will find a number of different plants, some of which are toxic to the horse.

Hundreds of poisonous plants reside in North America, and many are extremely common.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OVERVIEW

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The majority of these plants pose little threat to horses because they are unpalatable, and horses will often need a reason to eat them. The most common reason is hunger.

Owners also can unintentionally feed toxins to their horses through contaminated hay and grain or by offering certain tree, shrub or grass clippings.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OVERVIEW

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A 1,000-pound animal has to consume significantly higher quantities of a toxic plant than a smaller animal to be affected clinically.

“The dose makes the poison.”

However, some plants are cause for concern since even a curious nibble or repeated browsing over several weeks or months can lead to serious illness or death.



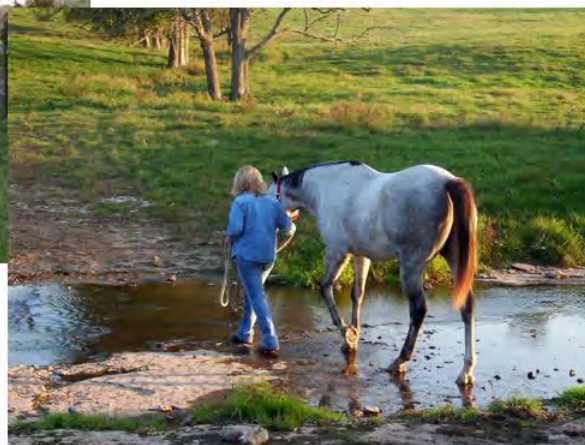
# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OVERVIEW

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All poisonous plants are worth recognizing so they can be removed from your horse-keeping areas, and so they can be avoided as you ride along trails, waterways, roadways and woods.







# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OVERVIEW

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The following plants are the 10 most dangerous plants to horses found within the United States.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## BRACKEN FERN

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**Bracken Fern** (*Pteridium aquilinum*)

*Also known as:* brake fern, eagle fern

*Identification:* A perennial fern with triangular leaves that can reach two to three feet high. Grows in woodlands and moist open areas and spreads by an extensive root system.

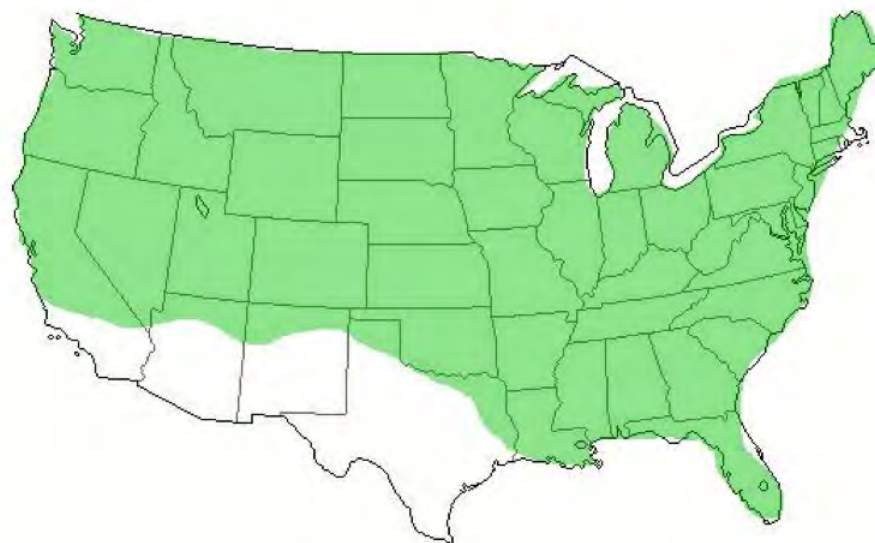




# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## BRACKEN FERN

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*Range:* Coast to coast, except for the Mediterranean and desert climates of Southern California and the Southwest.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## BRACKEN FERN

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*The danger:* Bracken fern contains thiaminase, which inhibits absorption of thiamin (vitamin B1). Thiamin is necessary for nerve function, and a deficit of thiamin can lead to neurological impairment.

Horses consuming a diet comprising 20 to 25 percent of bracken fern for several weeks will become poisoned.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## BRACKEN FERN

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*Signs:* Signs are related to neural dysfunctions resulting from B1 deficiency and can include depression, incoordination and blindness.

*What to do:* Large doses of thiamin over the course of one to two weeks can aid in the recovery of horses whose bracken consumption is discovered before neurological signs are severe.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## HEMLOCK

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**Hemlock** (*Conium maculatum*)

*Also known as:* poison hemlock, spotted hemlock

*Identification:* A biennial noxious weed with branching stems, toothed, fern-like leaves and clusters of small white flowers. The stems have purple spots, which are more evident near the base of the plant.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## HEMLOCK

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*Range:* Grows wild along roadsides and other open uncultivated areas throughout North America.

*The danger:* Hemlock leaves, stems and seeds contain neurotoxins that affect both central and peripheral nervous systems. Four to five pounds is a lethal dose for a horse. Most animals will avoid the plant.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## HEMLOCK

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*Signs:* Signs appear within an hour or two of consumption, starting with nervousness, tremors and incoordination, progressing to depression and diminished heart and respiratory rates, and possibly colic. Death results from respiratory failure.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## HEMLOCK

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*What to do:* There is no specific antidote or treatment for hemlock poisoning. Supportive treatment may help recovery when non-lethal quantities of the plant have been consumed.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TANSY RAGWORT

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**Tansy Ragwort** (*Senecio jacobaea.*)  
*Also known as:* Groundsel

*Identification:* A multi-stemmed weed with alternating leaves that produce clusters of small daisylike yellow flowers.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TANSY RAGWORT

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*Range:* Approximately 70 species of Senecio grow throughout the United States, in many different habitats. Many are common in pastures and along roadsides.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TANSY RAGWORT

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*The danger:* Senecio species contain pyrroliziding alkaloids, the concentration of which varies among species. These alkaloids are cumulative in effect and inhibit cell division, especially in the liver. Liver damage is irreversible.

Most horses succumb to chronic exposure over time, after consuming a total of 50 to 150 pounds of the plant over time.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TANSY RAGWORT

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*Signs:* Signs of poisoning do not appear clinically until severe liver damage has occurred:

- Photosensitization
- Diminished appetite and weight loss
- Depression
- Incoordination
- Jaundice





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TANSY RAGWORT

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*What to do:* Pyrrolizidine alkaloids produce severe and irreversible liver disease and there is no effective treatment. Euthanasia is recommended when liver failure occurs.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## JOHNSON GRASS/SUDAN GRASS

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**Johnson grass/ Sudan grass (*Sorghum* spp.)**

*Identification:* Both Johnson grass and Sudan grass are coarse-stemmed grasses with broad, veined leaves that can grow up to six feet. Both produce large, multi-branched seed heads.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## JOHNSON GRASS/SUDAN GRASS

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*Range:* A wild grass native to the southern climates that grows alongside roadways and other uncultivated open areas. Cyanide-free hybrids of Sudan grass are cultivated throughout the United States as a forage crop.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## JOHNSON GRASS/SUDAN GRASS

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*The danger:* Leaves and stems of these plants contain cyanide compounds, which when metabolized, inhibits the body's ability to absorb oxygen, thereby causing suffocation. Young shoots of Johnson grass contain the highest concentrations of the toxin.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## JOHNSON GRASS/SUDAN GRASS

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*Signs:* Signs consistent with acute cyanide poisoning include rapid breathing, gasping, frequent urination and defecation, bright red mucous membranes and progressing to convulsions and death.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## JOHNSON GRASS/SUDAN GRASS

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Feeding some sorghum hays to horses over a period of weeks can result in permanent damage to the nerves of the urinary bladder, which results in urinary incontinence and hindquarter weakness.

A second more common problem associated with feeding sorghum hay to horses is the development of urinary incontinence and hindquarter weakness. This is due to permanent damage of the nerves supplying the urinary bladder and hindquarters.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## JOHNSON GRASS/SUDAN GRASS

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Once affected, there is no effective treatment for the nerve damage. Secondary bladder and kidney infections are common.

**Important:** Do not feed sorghum hay to horses for prolonged periods unless the hay is from a known "cyanide-free" sorghum hybrid.

*What to do:* Supportive drug therapy can offset the effects of less severe cyanide poisoning.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## LOCOWEED

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**Locoweed** (*Astragalus* spp or *Oxytropis* spp.)

*Also known as:* Crazy weed

*Identification:* Leafy perennials with short stems and compound leaves that grow in tuftlike forms from a single taproot. The flowers, often white or purple, are borne on leafless stalks.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## LOCOWEED

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*Range:* Different species of locoweeds – spotted or blue, woolly, purple, Lambert's, two-grooved milk vetch, white-point – grow in varied terrains throughout the West and the Southwest, often in dry, sandy soil.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## LOCOWEED

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*The danger:* All toxic species of locoweed contain swainsonine, an alkaloid necessary for complex sugar metabolism in cells, resulting in sugar accumulation and disruption of cell function, most noticeably in the brain.

Horses that consume locoweed may develop a taste for it due to its palatability and nutritive value.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## LOCOWEED

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*Signs:* Strange behavior is usually first evidence. Horses may bob their heads, adopt exaggerated, high-stepping gaits or stagger and fall.

Other signs may include abortion (mid- to late-term), birth defects, male infertility and vision impairment. Pregnant mares may produce foals with a bony deformity of the lower leg.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## LOCOWEED

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*What to do:* There is no treatment for advanced locoism and the effects are irreversible. Horses with less severe poisoning may recover when access to the weed is removed.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OLEANDER

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**Oleander** (*Nerium oleander*)

*Also known as:* Rose laurel, adelfa, rosenlorbeer

*Identification:* An evergreen shrub that can reach the size of a small tree. Oleanders have elongated, thick leathery leaves that can grow three to 10 inches long. The flowers on the plant grow in large clusters and can be white, pink or red.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OLEANDER

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*Range:* Hardy only in hot climates, used extensively in landscapes across the southern United States from California to Florida. It is also grown as a potted plant in northern areas.

*The danger:* All parts of the plant contain toxins oleandrin and neriin, which disrupt the beating of the heart. Leaves remain toxic when dried. Approximately 30 to 40 leaves can be deadly to a horse.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OLEANDER

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*Signs:* Effects are usually seen several hours after ingestion and last more than 24 hours.

Signs may include:

- Colic
- Difficulty breathing
- Tremors
- Recumbency
- Irregular heart rate
- Death may be an outcome



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OLEANDER

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*What to do:* Horses can survive if treated early with supportive care.

Most oleander poisonings occur when trimmings are thrown into pastures after pruning.

Do not plant oleander in or around horse pastures.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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### **Red Maple Trees (*Acer rubrum*)**

*Identification:* Medium-sized tree with green leaves in the spring and summer, with shallow notches, bright red stems and a whitish underside. In the fall, leaves are bright red. The bark is smooth and pale gray on young trees and becomes dark and broken with age.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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*Range:* Native range is eastern North America, from Canada to Florida and west to Minnesota and eastern Texas. Ornamental specimens have been planted all over the country.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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*Danger:* Ingestion of fresh, growing red maple leaves seems to do little or no harm. Wilted leaves become extremely toxic to horses. Access to wilted leaves is most common after storms, which may cause branches to fall, or in autumn when leaves begin to fall and are blown into grazing pastures.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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Toxins in wilted red maple leaves cause red blood cells to break down so that the red blood cells cannot transport oxygen to the tissues. Kidneys, liver and other organs can also be damaged. As little as one to two pounds of wilted leaves can be fatal.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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*Signs:* Signs can appear within a few hours or as long as four or five days after consumption. Signs include:

- Lethargy
- Refusal to eat
- Dark red-brown or black urine
- Increased respiratory rate
- Rapid heart rate
- Dehydration



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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*What to do:* Recovery depends on how many leaves were consumed and how promptly the horse receives care.

Horses suspected of eating quantities of red maple leaves should be seen by a veterinarian as soon as possible.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## RED MAPLE TREES

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*Special Note:* Research indicates the leaves of at least two related species (silver and sugar maple) may contain the same toxic elements as red maples, but in less toxic amounts.

Hybrids of red maples with other maples should be considered potentially toxic.



*Silver Maple Leaf*



*Silver Maple Bark*



*Sugar Maple Leaf*



*Sugar Maple Bark*





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## WATER HEMLOCK

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**Water hemlock** (*Cicuta* spp.)

*Also known as:* Spotted water hemlock

*Identification:* A perennial weed with hairless stems that can grow up to six feet with clusters of fleshy roots. Leaves are elongated and toothed. The small white flowers form flat, umbrella-shaped clusters at the ends of branches.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## WATER HEMLOCK

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*Range:* Water hemlock grows throughout the United States and is most likely to be found in marshy areas of meadows and along streams and irrigation ditches.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## WATER HEMLOCK

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*The danger:* Considered one of the most toxic plants in the United States, all parts of water hemlock contain a cicutoxin alkaloid that affects the central nervous system. Most toxin is concentrated within the root. Horses have been known to browse the plant, and less than a pound of the leaves and stems can be fatal.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## WATER HEMLOCK

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*Signs:* Toxins affect neurons primarily within the brain, causing various symptoms, including:

- Excessive salivation
- Dilated pupils and nervousness
- Difficult breathing



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## WATER HEMLOCK

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- Degeneration of the heart and skeletal muscles
- Seizures and convulsions
- Death (respiratory paralysis)

Signs of poisoning appear within one hour of ingestion.  
Death typically follows within two to three hours.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## WATER HEMLOCK

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*What to do:* Supportive care initiated before convulsions begin can offset the worst effects of the seizures, but horses that survive may have permanent damage to the heart and skeletal muscles.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YELLOW STAR THISTLE/RUSSIAN KNAPWEED

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### **Yellow Star Thistle/Russian knapweed**

*Also known as:* Barnaby's thistle



Yellow Star Thistle  
(*Centauria solstitialis*)



Russian Knapweed  
(*Acroptilon repens*)



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YELLOW STAR THISTLE/RUSSIAN KNAPWEED

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*Identification:* Yellow star thistle is an annual weed that grows up to three feet tall with spiny yellow flowers.

Russian knapweed spreads via a creeping root system, also growing two to three feet tall with thistle-like flowers ranging from purple to white.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YELLOW STAR THISTLE/RUSSIAN KNAPWEED

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*Range:* Both plants appear throughout the western United States, approximately from Missouri to California and from Mexico northward, extending into western Canada. They appear as weeds along roadsides, in cultivated fields and pastures.



Russian Knapweed Range



Yellow Star Thistle Range





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YELLOW STAR THISTLE/RUSSIAN KNAPWEED

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*The danger:* Both plants contain toxic agents that affect the brain, specifically damaging the nerves that control the animal's ability to bite off and chew its food.

Horses must consume 50 to 200 percent of their body weight over a period of one to three or more months in order to cumulate a toxic dose.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YELLOW STAR THISTLE/RUSSIAN KNAPWEED

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*Signs:* Horses may appear to have tense or clenched facial muscles and are unable to bite or chew their food effectively. Weight loss is also common. Gait incoordination may also be evident.

*What to do:* There is no treatment. Any neural damage is permanent. Euthanasia is recommended if the horse is too debilitated to eat.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YEW

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Yew (*Taxus* spp.)

*Identification:* Woody evergreen shrub with closely spaced, flat, needle-like leaves. Berries are bright red or yellow, soft and juicy with a hole in the end where the dark seed is visible.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YEW

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*Range:* Western and American yew are native to the West Coast and to the eastern and central United States. Commonly planted as ornamentals.

*The danger:* All parts of the yew (except fleshy portion of berries) contain taxine, an alkaloid that causes respiratory and cardiac collapse. Leaves remain toxic even after dried. A single mouthful can be deadly to horses within minutes.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## YEW

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*Signs:* Sudden death is the most typical sign of yew ingestion. Animals found alive may be trembling and colicky, with difficulty breathing and a slowed heart rate.

*What to do:* There is no treatment. Avoidance is critical. Most yew poisoning occurs when trimmings are thrown into pastures after pruning.

Do not plant yew in or around horse pastures.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OTHER TOXICITIES

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### Other Toxicities

Another commonly overlooked reason a horse may become poisoned is allowing horses to graze a pasture after it has been sprayed with herbicide, but before the weeds have died and disappeared.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OTHER TOXICITIES

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Phenoxy compounds such as 2, 4-D are believed to make plants taste better and, in some cases, to increase concentrations of natural plant toxins.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PROTOCOL

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If you suspect your horse has ingested a poisonous plant:

- Remove the horse from the source.
- Contact your veterinarian immediately.
- Attempt to determine how much of the toxic plant was eaten and what was eaten. *(Small amounts of some toxins can be fatal in a short period of time while others require large amounts to be eaten over several weeks or months.)*



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PROTOCOL

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In general, toxicity depends on several factors:

- Soil
- Climate
- Growth state of plant
- Horse's age, weight and individual tolerance
- How much food was in the stomach when toxin was consumed





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TREATMENT

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Some poisonous plants have specific antidotes, but for most toxic plants, the effects can only be treated symptomatically (supportive care and measures to limit further exposure).

Depending upon the type of toxin and quantity consumed, signs of poisoning may develop and cause permanent or irreversible damage.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TREATMENT

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Since there are many different kinds of poisonous plants, there are many different signs of poisoning. The most common may include:

- Difficulty swallowing or breathing
- Colic
- Founder
- Hyperexcitability/seizures/incoordination
- Weight loss





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TREATMENT

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- Limb edema
- Photosensitivity
- Collapse
- Sudden death

Often these syndromes must be differentiated from similar diseases caused by infectious, nutritional or age-induced problems by a thorough case history, physical exam and diagnostic work up.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## TREATMENT

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Owners should not attempt to treat poisoning themselves.

**Contact your veterinarian immediately!**



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PREVENTION

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Owners should strive to prevent their horses from ingesting poisonous plants by learning the most common poisonous plants in their region. This should include time of year they are most palatable or most toxic.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PREVENTION

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For example, white snakeroot (*Ageratina altissima*) poisoning usually occurs during mid-summer to early winter when pastures are eaten down or dried up.







# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PREVENTION

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Limiting or restricting pasture turnout during times of the year when toxin levels of certain plants may be elevated and assuring your horse is well-fed before being turned out can reduce the risk of poisoning.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PREVENTION

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Do not overstock pastures with too many horses per acre, and maintain pastures accordingly.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## PREVENTION

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Provide good quality hay and grain, being sure to inspect both regularly before feeding.

If there are any doubts about the quality of your hay or grain, ask your veterinarian to send random samples for testing.

*Note: Even corn that looks normal can be fatal.*





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## REFERENCES

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For poisonous plant identification, start with your local veterinarian. He or she can put you in contact with your local county extension agent or the nearest university.

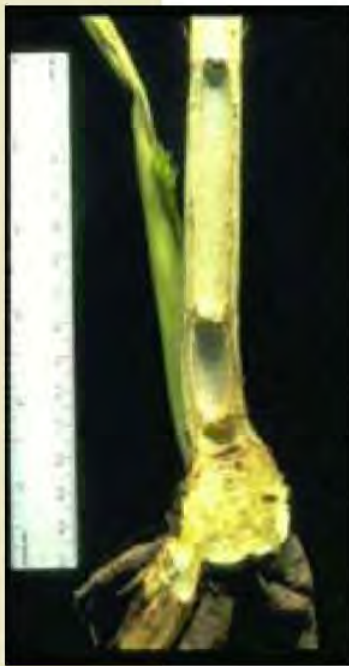
Greenhouses, herbariums, florists and botanists can also be resources for information.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## REFERENCES

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Weed experts will usually require the entire plant (including the root) in order to properly identify the source.

For immediate identification, wrapping the plant in moist paper will suffice.

If the plant must be mailed, pressing it dry between papers is best.

Digital pictures of the plant may also be sent to *aknight@colostate.edu*.



# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## CONCLUSION

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As a horse owner, there are many things to consider when providing your horse with good quality feed, water and turnout.

Do you still have to worry about your horse becoming sick from eating a poisonous plant?





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## CONCLUSION

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Common sense and good horse management provides the best protection. By taking advantage of what is known, you can decrease the chance of your horse eating the wrong plant at the wrong time.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

## OTHER RESOURCES

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There are a number of databases on the Internet that can be searched for further information regarding poisonous plants. Visit the AAEP Horse Owner web site for a list of some of these available resources.

Consult with your AAEP-member veterinarian for further guidance concerning poisonous plants in your region.





# HORSE HEALTH EDUCATION: POISONOUS PLANTS

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